



## PERFORMER RPM **HYDRAULIC ROLLER CAMSHAFT**

For 351 c.i.d. (Windsor) Ford V8 Engines

CATALOG #2281

### INSTALLATION INSTRUCTIONS

**These instructions are designed to give general installation guidelines.** A complete step-by-step procedure manual would require many pages. If you are a novice or just learning to work on automotive engines, we recommend consulting either Chilton or Motors automotive manuals before you begin. You may also contact an experienced mechanic. Please be advised that an improper installation may result in **LOW MILEAGE, POOR PERFORMANCE, COSTLY REINSTALLATION AND EVEN ENGINE DAMAGE.** Installing a camshaft is a complex procedure. Please follow these instructions carefully. Failure to do so may void your warranty.

- Before you begin the removal and installation process, please examine the kit for possible shipping damage. If the camshaft is damaged, contact your dealer immediately. Also, make sure you have all the recommended tools and parts as listed below. As you read through these instructions the first time, use the preparation checklist to check off the exact items you will need.
- Performer RPM camshafts are ground specifically for use with the corresponding Performer or Performer RPM manifold. They are dyno-matched and street proven to work as a team; especially when part of an Edelbrock Total Power Package. However, a Performer RPM camshaft package may also be used with other components designed to operate in a similar RPM range.

#### PREPARATION CHECKLIST

##### Tools & Equipment For Installation

- Box and open end wrenches
- Socket set
- Distributor wrench
- Pliers (channel locks & hose clamp)
- Screw drivers (regular and phillips)
- Torque wrench
- Hammer
- Gasket scraper or putty knife
- Timing light vacuum gauge
- Rags
- Water bucket
- Harmonic balancer puller
- Masking tape (for tagging hoses and electrical wires)
- Chalk , paper and pencil
- Crankshaft dampener puller

##### Hardware & Parts To Buy

- Edelbrock Roller Lifters #97453, or equivalent
- Edelbrock Push Rods #9656 (designed for roller lifters), or equivalent
- Nylon camshaft thrust button (included).
- Intake Gaskets - Edelbrock #7220, OEM or equivalent
- Pipe plugs, if needed
- Edelbrock Gasgacinch #9300
- RTV Silicone sealer
- Engine oil and filter
- Radiator coolant
- Adjustable, stud mounted rocker arms
- Edelbrock True Rolling Timing Chain Set #7811 (1984-1995: from 3/21/84) or #7820 (1962-1984: to 3/21/84)
- Front cover oil seal, OEM or equivalent
- Valve Springs with a closed pressure of 110-120, open pressure of 330-340 and a lift of .550"

**NOTE:** Edelbrock Sure Seat Valve Springs #5722 are not recommended.

## IMPORTANT NOTES AFFECTING YOUR WARRANTY. PLEASE READ BEFORE CONTINUING THIS INSTALLATION!

**CAM LOBE DAMAGE:** Cam lobe wear is almost non-existent unless mismatched parts are used or installation of the cam and lifters is done improperly. Cam damage can result from the timing gear loosening due to improper torque on bolts. Bolts holding gear to camshaft should be torqued carefully and a locking compound applied to threads of bolts. Before installing your new Performer-RPM roller camshaft, check the gear drive on the distributor and oil pump for any signs of wear. If worn, be sure to replace with a new gear or you may wear out your camshaft prematurely. High-pressure oil pumps are not recommended with Performer RPM roller camshafts. Edelbrock camshafts are designed to be used with Edelbrock timing chains.

**VALVE SPRINGS (CAUTION REGARDING YOUR WARRANTY):** In order for this Performer RPM roller cam to be covered under ANY WARRANTY, you MUST use the correct Valve Springs. Failure to install the correct valve springs may cause lifters not to follow the cam lobes and damage engine parts. This camshaft is designed to function with valve Springs that have a closed pressure of 110-120lbs, open pressure of 330-340 lbs and a lift of .600". Special high performance retainers may be necessary with your installation for proper spring height. Do not use rotator type valve springs or retainers for this application.

**Note:** Edelbrock Sure Seat Valve Springs #5722 are not recommended with cast iron heads.

**LIFTERS:** Edelbrock offers a replacement roller lifter kit, part #97453. To install new or factory roller lifters, use fresh clean oil on the lifter and the lifter bore just prior to installing. Make sure to re-install the factory guide system (if applicable). The guide bar (high side of tappet) must face the opposite side of block, with the arrow pointing up.

**PUSHRODS AND ROCKER ARMS:** High performance pushrods and stud mounted, adjustable roller rocker arms are recommended for this installation. Edelbrock Pushrods #9656 are recommended. After the

cam is installed and timed correctly (**See Figure 2**), it will be necessary to check each pushrod for correct lifter preload. Use lifter manufacturer's specifications for proper preload.

**TIMING CHAIN:** Use Edelbrock Performer-Link Timing Set #7811 or 7820, Hex-A-Just Timing Set #7335, or Accu-Drive Gear Drive #7892 ONLY (See catalog for application coverage). Do not use late model timing chain and gear sets that are designed for emission-controlled engines. These timing sets are machined in a retarded position and are not recommended for this camshaft installation. Edelbrock Timing Sets feature adjustments to allow for specific timing selection.

**CAM GEARS AND CAMSHAFT END PLAY:** If cam gear becomes loose, the cam will slide back in the block, causing the lifters to hit the lobes next to them and also the cam bearing journals. If the engine is run after this happens, the bottom of the lifters and the sides of the lobes will become damaged. See Installation Instructions section for end play specifications.

**OPERATING CLEARANCES:** When installing a camshaft, it is always important to check for proper operating clearances, especially when high performance components are used. Things to look for that can cause failure and damaged parts are as follows:

1. Improper valve-to-piston clearance (this should be no less than .080" for the intake valve, and .100" for the exhaust valve).
2. Rocker arm stud slot clearance (both ends; valve closed and open).

**NOTE:** We recommend the use of roller rockers.

3. Proper spring settings (see dimensions with spring instruction sheet). Correct dimensions mean maximum performance and longer engine life.

### REMOVAL OF ENGINE PARTS BEFORE CAMSHAFT INSTALLATION

(Be sure to keep all parts in order)

#### WARNING! DO NOT REMOVE RADIATOR CAP OR RADIATOR HOSES WHILE ENGINE IS HOT!

**IMPORTANT NOTICE:** If the air conditioning condenser needs to be removed to provide clearance for camshaft removal, have the system evacuated by an appropriate repair facility **BEFORE** starting the installation. The facility can recharge the system after installation.

1. Disconnect the battery.
2. Drain radiator coolant. Drain plug will normally be located on lower right or left side of the radiator facing the engine.
3. Remove radiator and air conditioning condenser, if so equipped. In some cases, the front grille may have to be removed. Measure distance from front cover to grille or brackets that may interfere with camshaft against the length of the camshaft.
4. Remove the gas cap to relieve pressure. Disconnect fuel line and plug. Replace gas cap.
5. Disconnect all linkage from carburetor such as throttle, throttle springs, transmission, cruise control and automatic choke.
6. Tag and remove coil wires and sensor wires.
7. Tag and remove vacuum lines.
8. Remove valve covers.
9. Remove distributor cap and wires, rotate engine until rotor points towards number 1 terminal in cap and pointer on front cover is on top dead center (TDC) and remove distributor (**See Fig. 1**).  
**NOTE:** Mark the approximate position of the distributor housing in relation to the manifold to assist in getting the distributor properly located during re-installation.
10. Remove carburetor and intake manifold. Remove and discard intake manifold gasket. Clean additional gasket material and sealant from the cylinder head flanges. Cover the lifter valley with rags and use care to prevent material from falling into the lifter valley.

11. Remove rocker arms and pushrods.
12. Remove hydraulic valve lifters.
13. Remove crankshaft pulley, and using a suitable puller, remove the crankshaft dampener.
14. Remove fuel pump. Rotate engine until timing marks are aligned (**See Fig. 2**).
15. Loosen oil pan and remove water pump and front cover.
 

**NOTE:** *The front cover oil seal should be replaced before the front cover is re-installed.*
16. Remove bolts retaining camshaft sprocket. Remove sprocket and chain. Using a suitable puller, remove the crankshaft sprocket.
17. Remove thrust plate and camshaft, being careful not to damage cam bearings. Cam bearings should be replaced if necessary.

## INSTALLATION PROCEDURE

1. Check lifters as covered in Lifters section. Coat cam lobes with fresh clean oil. Lube distributor drive of cam with assembly lube (supplied).
2. Install new camshaft and factory thrust plate. Torque thrust plate bolts to 9-12 ft./lbs. Install new sprockets and timing chain. Torque cam sprocket bolts to 40-45 ft/lbs.

**CAUTION:** *When using an Edelbrock Timing Chain and Gear Set with an Edelbrock cam, straight up timing alignment is achieved. If any other timing gear set is used, it is necessary to check camshaft position for correct timing alignment. This requires indexing the camshaft with a degree wheel to verify timing alignment. O.E.M. or non-Edelbrock timing gear sets are not recommended for use with Edelbrock camshafts. Use locking compound material on bolts holding gear to cam.*

3. Install your roller lifters using fresh clean oil on the lifter and the lifter bore just prior to installing. Check to make sure all lifters fit freely in lifter bores.
4. Align camshaft with timing marks lined up as recommended by factory specifications. See Figure 2.
5. Torque front timing cover bolts to 12-18 ft. lbs., and tighten oil pan bolts.

**NOTE:** *Install new seal between oil pan and front cover if old seal was damaged upon removal. Use RTV silicone sealant on seal to ensure proper seal to pan.*

6. Install front harmonic balancer and torque to 70-90 ft.-lbs.
7. Install fuel pump.
8. Install water pump using new gaskets and torque to 30 ft.-lbs.

### 9. VALVE ADJUSTMENT

- A. Install pushrods with lube on both ends, making sure the pushrod tip hits the center of the lifter cup. Install rocker arms, but do not install adjusting nuts. You are now ready to start valve adjustment.
- B. Turn the engine over until the No. 1 cylinder exhaust lifter just starts to move up. At this point, install adjusting nut on the intake rocker arm and adjust to zero clearance between rocker arm and valve tip. This is "zero lash". While tightening the rocker nut, spin the pushrod between your

thumb and forefinger. When you feel resistance, you are at zero lash. From this point turn adjusting nut down (clock-wise) 3/4 turn more for final adjustment.

- C. Turn the engine over again until the intake lifter just stops coming down. Install the adjusting nut on the exhaust rocker arm and adjust to zero clearance between rocker arm and valve tip. From this point turn adjusting nut down (clock-wise) 3/4 turn more for final adjustment.
  - D. The above procedure assures correct hydraulic lifter preload. Repeat this procedure for each of the other seven cylinders.
10. Install intake manifold using new intake gasket set and torque bolts to 25 ft/lbs.

### DISTRIBUTOR INSTALLATION & ENGINE TIMING:

**NOTE:** This cam is a cast cam and requires a cast distributor drive gear.

1. Turn the engine over in direction of rotation until the No. 1 intake valve closes and continue until the pointer on the front cover is approximately five degrees before top dead center (BTDC). **See Figure 1** for firing order.
2. Re-install the distributor with the rotor pointing towards No. 1 terminal in the cap, and with the distributor housing in its original position. If distributor will not drop down all the way to the flange on the manifold, it will be necessary to align the distributor shaft with the oil pump drive. Slowly rotate the engine until the distributor drops down against the manifold, then continue turning until two complete revolutions are completed and the timing marks once again come to five degrees BTDC.
3. Lightly tighten the hold-down clamp so that the distributor can still be turned to determine final setting using a timing light with the engine running.
4. Replace valve covers, carburetor linkage and remaining vacuum and electrical connections.
5. Engine oil and filter should be changed before start-up.

### CAMSHAFT & LIFTER RUN-IN:

**IMPORTANT:** Standard camshaft run-in is not required when using a roller cam.

### SPECIAL INSTRUCTIONS:

With the Edelbrock manifold and camshaft package installation, a carburetor jet change and ignition timing changes may be required for best performance. Due to the varied applications of years and models of vehicles, no one combination could suffice for all installations. The following procedure is only a guideline.

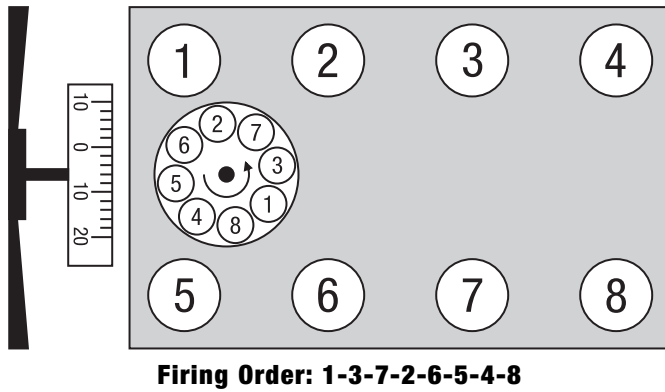
### IGNITION TIMING:

Increase initial setting to 14° BTDC (Before Top Dead Center). Total advance not to exceed 38°. To select the proper distributor vacuum advance port on your carburetor, we suggest the following procedure. Before removing the vacuum line from your carburetor, with the engine idling, pull the hose off the port that routes to the vacuum advance

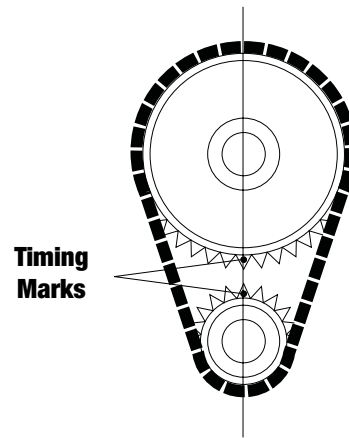
canister. After the hose has been removed from the carb, place your finger over the vacuum outlet. If (at idle), you feel your finger being sucked in toward the carburetor, you have full-time vacuum advance. If you do not feel any vacuum pulling at your finger with the engine at an idle, you have timed/ported vacuum advance.

### HEADERS & EXHAUST SYSTEM:

For best performance, headers are recommended. They should be 1-3/4" in diameter, approximately 31" long, with a 3" collector should be used.. The exhaust system should consist of dual exhaust pipes, at least 2" diameter with low back-pressure mufflers such as the Edelbrock SDT Series mufflers. Please consult your Edelbrock dealer or the Edelbrock catalog for a listing of available Edelbrock SDT Mufflers.



**Figure 1 - 351 c.i.d Windsor (351W) Ford V8  
Firing Order and Timing Marks  
Turn distributor clockwise to advance timing**



**Figure 2 - Timing Chain Sprocket Alignment**